Developmental Testbed Center

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Abstract

The Developmental Testbed Center (DTC) is a multiagency effort to accelerate the transition of research into Numerical Weather Prediction (NWP) operations at the nations operational centers, NCEP and AFWA. Currently, DTC work is carried out in a collaborative fashion by NCAR and GSD/ESRL. DTC aims to achieve its objectives by strengthening the links between the research and operational communities. In particular, Operations to Research (O2R) activities are aimed at providing access for the research community to NWP tools used in operations. DTC achieves this by (1) Creating, maintaining, and making available to the community repositories of codes used operationally at NCEP and AFWA (WRF, MET, HWRF, GSI, Short-Range Ensemble Forecast – SREF, the latter not being open to the community); (2) Computational environment functionally similar to that in operations – by providing scripts and other tools that enable DTC and visitors to run experiments in an environment similar to operations (WRF, HWRF, GSI, SREF); (3) Test facility (WRF) – a collection of selected cases and other tools supporting the execution of controlled experiments; (4) Helpdesk to offer advice to the broader community in using DTC facilities including the code repositories (WRF, HWRF, GSI, MET); (5) Tutorials on the use of different DTC facilities (WRF, HWRF, GSI, MET); (6) Workshops reviewing scientific progress in various task areas (WRF, HWRF, GSI, MET, ensembles). Research to Operations (R2O) work includes tests of operational, reference, and experimental versions of the NWP tools listed above, and the evaluation of such tests with the aim of (1) informing operational centers in their decision making; and (2) assessing the performance of new methods for potential consideration for use by the operational centers.

Recent significant accomplishments at DTC include the creation of a Mesoscale Model Evaluation Testbed (MMET) that will allow academic investigators to study the impact of their Weather Research Forecast (WRF) model innovations on operational systems in a set of preselected high impact weather cases; the creation of a code repository for the Hurricane WRF (HWRF) modeling system that is shared between EMC and DTC and that is made available to the research community, and updated on a continual basis; initial testing the hybrid GSI data assimilation scheme for initializing the HWRF model; the testing of the North American Ensemble Forecast System (NAEFS) downscaling algorithm in the Short Range Ensemble Forecast System (SREF) of NCEP that led to the transition of that system into SREF operations; and the development of new NWP Model Evaluation Tools (MET), including the Method for Object-Based Diagnostic Evaluation (MODE).